MEASUREMENTS, TIME RECKONING, DIRECTIONS, AND COLORS

A number of measurements are in use. These have no names. The finger span, from the tip of the thumb to the tip of the middle finger, and the hand length, from the tip of the middle finger along the palm to the wrist, are used in measuring arrow foreshafts, for example. Finger width, that is of the first two fingers, gives the width of a bow. The arm length, from the tip of the middle finger along the inside of the arm to the shoulder joint, gives that of the arrowshaft. The span of the arms, i.e., between the outstretched hands, is used to measure buckskins, the excess being measured in finger spans. The half arm span, from the sternum to the finger tips, is half the length of a bow. Steps are used in measuring houses, etc. Formerly the foot length was not in use. The Hopi use the forearm to measure the length of ears of corn when trading, but the Havasupai make no use of this measurement. 804 [171]

By way of a device for laying out lines, for example, in making a woman's dress, the bow is used: the back furnishes curved lines, the string straight ones. [294]

I have not observed that the fingers or other objects are used in counting. Of course counters are used in certain games, but not because they cannot reckon without them. Beside the numerals given below,[1] fractions (at least a half) are named. 802

1 ɬsl'tȧ
2 xuwȧ́gȧ
3 hūmúgȧ
4 hop'ȧ́
5 θθt'ȧ́pȧ
6 tacpθ'
7 xuwagacpθ'k
8 humugθacpθ'k
9 halθθdia
10 viwa''avȧ
20 wavȧ́huȧ́gȧ or xuȧ́gȧvuwȧ́gȧ

[1] See also Harrington, (a), 234.

1:Spier E-5 (1918) 1928
NT14 Plateau Yumans NT14
Havasupai

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22 wavàhuágà xuágàtcšálš or xu'agávuavá xu'agà tcšálš
23 wavàhu'agà hümugà tcšálš or xu'agávow'avà hümugà tcšálš
30 wavahumugà or humúgávuwávà
40 wavàhopa" or hopadjšvuwávà
41 wavàhopa" sl'tlgtcšálš or hopadjšvuwàva sltlgtcšálš
50 wavàšet'apà or ššt'apávuwávà
60 wavàtšcpš' or tšcpaivuwávà
70 wavàxuagàcpš' or xuagàcpaivuwávà
74 wavàxuagàcpš'hopaktcšálš or xuagàcpaivuwavà hopak tcša'lš
77 wavàxuagàcpš'xuwagàcpš"tcšálš or xuagàcpaivuwavà xuwagàcpš"tcšálš

One to five, nine, and ten are independent stems: six is presumably based on one, seven on two, and eight on three.[1] Twenty is either ten-two or two-ten: twenty-two is compounded of ten-two and two, and so on.

805 Four seasons of the year are named, although it is doubtful that these are thought of as definite divisions: *dtcúdlgd*, winter; *tnydátúyd*, summer; *n„lmuwémlmd*, spring (March and April); and *matmúnlmd*, fall (October and November).

Years are said to be counted by snows (*kandpatcd*); a myth gives a duration of ten winters (*tcúdin„dvuwdvd*).[2] Shorter periods are designated in months, i.e., moons[3] (as *kdldhop'dgd*, four months) or in sleeps (as *hopa'djdsmš'g*, four sleeps).

The calendar presents the confusion commonly observed where twelve named periods are intended to correspond to the thirteen lunar months, and because some of them begin with the appearance of certain constellations there is further confusion. In addition, my information is not clear.

The year begins in the middle of November when the Hoop constellation rises. The following list of months was obtained in August, 1918 from Sinyella.

1. sšldjš'lià, hand + to come.
Cottonwood leaves fall.
[821] Begins with the rising of Tavádjúdá, the hoop of the hoop-and-pole game, at dawn in the southeast. One of the culture heroes fixed this as indicating the first month. (Rose November 4, 1919.)
2. hálà'jaginyuwéva, moon + [man] staying at a house.[4]
Cool; a little snow on the plateau.

[1] I neglected to record in my notes the numbers from eleven to nineteen, but as I recall eleven is vuwívádlá, and so on.
[2] There are no calendar records of the Piman type (Russell, (c), 76–80.)
[3] A San Carlos man kept track of a child's age by moons (Hrdlička (d), 402). For the division of the day and year among the Yuma, see Trippel, 578.
[4] This may refer to the winter solstice.